Enhancing Handwriting of Kindergarten Learners Through Direct Purposeful Experiences

John Russel I. Aguinaldo[1], Allyson Lois P. Bacucang [2], Alyana Capili[3], Reynalyn Naldo[4], Esther G. Domingo[5], Joel B. Faustino[6], Aurora E. Perillo[7], Joseline M. Santos[8]

[1]Bulacan State University, Philippines

DOI: https://dx.doi.org/10.47772/IJRISS.2026.100500130

Received: 24 April 2026; Accepted: 29 May 2026; Published: 25 May 2026

ABSTRACT

Handwriting is an essential part of child development because it helps intertwine fine motor skills, literacy, and self-expression. On the other hand, most kindergarten students nowadays are showing lesser handwriting skills, mainly because of increased digital usage and fewer motor-based activities. The authors came up with the PENMA Program (Purposeful Experiences Nurturing Motor Abilities), which is designed to develop handwriting skills through structured and intentional experiences. The study utilized a quasi-experimental one-group pretest-posttest design involving kindergarten students of Pulilan Central School. The instruments used in the study were validated for pencil grip, letter formation, physical comfort, motor coordination, and attitudes toward handwriting. The results positively and significantly showed that handwriting performance, motor coordination, and learner attitudes have improved after the intervention. The study results prove that movement-based activities, when done purposefully, can serve as a tool to enhance the readiness of handwriting. This serves as an excellent model that can help bring about literacy and motor development in early childhood education settings and can be made use of by educators and policymakers.

Keywords – Handwriting performance, Kindergarten learners, Pencil grip, Letter formation, Physical comfort, Motor coordination, PENMA Program, Purposeful experiences, Early Childhood Education

INTRODUCTION

Handwriting is much more than just a physical task; it reflects a child's development because it combines their motor, intellectual, and emotional skills. The National Association for the Education of Young Children (NAEYC) emphasizes in a position statement that early writing supports language development, memory, and imagination. In short, writing is a crucial part of learning in a classroom. At the same time, UNESCO states that being ready for handwriting is one of the first steps toward providing inclusive and equitable quality education, as outlined by Sustainable Development Goal 4.

Worldwide, handwriting readiness is seen as a foundation for literacy. However, in the Philippines, many kindergarten learners still struggle with letter formation, spacing, and neatness. This situation shows the urgent need for localized interventions like the PENMA Program, which incorporates purposeful motor activities into daily classroom routines. Despite this, children's handwriting skills have declined in recent years. Increased use of digital devices means less time for hands-on activities like drawing, cutting, and tracing, which are essential for developing motor coordination. According to teachers, the situation worsened when schools closed during the pandemic, leaving many children with poor handwriting skills. Likewise, kindergarten children in the Philippines often fail to master how to form letters, space words, and maintain neatness because their motor skills are still developing.

Well-planned programs focused on movement have been successful in addressing handwriting problems. Targeted exercises that involve hands and fine motor skills improve pencil-holding, motor skills, and even writing habits and attitudes. However, many schools provide little or no consistent support for motor development. To address this gap, the PENMA Program was launched. It includes various fine motor activities such as grip fixes, stroking, sculpture, and guided writing.

This study examined the impact of purposeful hands-on experiences on young children's handwriting

performance. Unlike previous handwriting programs, PENMA stands out because it incorporates fine motor activities into daily classroom practice instead of treating them as extra drills. This approach makes the program more sustainable, replicable, and culturally relevant for Filipino kindergarten learners.

Specifically, this study will find answers to the following questions:

1. What are the handwriting outcomes of kindergarten learners before the implementation of the PENMA Program?

2. How can the PENMA Program be effectively implemented in the classroom to enhance handwriting in terms of:

   2.1. pencil grip
   2.2. letter formation; and
   2.3. physical comfort during writing.

3. What are the handwriting outcomes of Kindergarten learners after participating in the PENMA Program?

4. Is there a significant difference in the handwriting outcomes of Kindergarten learners before and after the implementation of the PENMA Program?

5. How does the attitude of Kindergarten learners toward handwriting change following the implementation of the PENMA Program?

METHODOLOGY

Research Design

A quasi-experimental one-group pretest-posttest design was used in this research to measure the effectiveness of the PENMA Program in improving the handwriting skills of kindergarten students. This design facilitated a structured observation of students' handwriting skills prior to and post-intervention. However, it is important to note that the absence of a control group means that external factors, such as natural maturation or concurrent classroom activities, may have influenced the results.

Participants and Respondents

The researchers chose all the kindergarten pupils from one class in a school in Bulacan. There were 25 pupils in total who participated in the PENMA Program during the third quarter of the school year 2025-2026. Due to the small sample size and focus on a single school setting, the generalizability of these findings to broader populations is limited. Future studies should aim to include more diverse school contexts to validate these outcomes further.

Research Instrument

Different validated tools were used to track changes. The Beery-Buktenica Motor Coordination Drawing Task (Baguio et al. 2023) was utilized to assess fine motor skills, while an observation checklist and a handwriting rubric evaluated letter formation and physical comfort. Finally, an emoji-based attitude scale measured learners' confidence and motivation.

Data Gathering Procedure

This study followed a systematic and ethical process, securing informed consent and school approval. The Pre-enhancement phase established baseline levels of motor coordination. The Enhancement phase lasted ten working days, integrating purposeful experiences like clay molding and tracing into classroom routines. Finally, the Post-enhancement phase involved re-administering initial instruments to assess significant improvements using paired t-tests.

Data Processing and Statistical Treatment

Data were organized, tabulated, and subjected to descriptive statistical analysis. This study utilized in-vivo coding and thematic analysis to interpret qualitative data from implementation logs. This step-by-step interpretation helped capture the developmental progress of the learners during the 10-day intervention.

RESULTS AND DISCUSSION

The results of the research have been shown through descriptive as well as inferential statistics and the basis for these are a few tables which present the handwriting performance of kindergarten students before and after introducing the PENMA Program. Detailed explanations have been given for each table to emphasize the enhancements seen in pencil grip, letter formation, physical comfort, motor coordination, and learner attitudes.

Table 1. Mean and Standard Deviation of Pre-test Scores in Handwriting Performance

Task	MEAN	SD	DESCRIPTION
1. Vertical	1.52	0.51	Proficient
2. Horizontal	1.44	0.51	Advancing
3. Circle	1.28	0.54	Advancing
4. Square	1.24	0.52	Advancing
5. Diagonal	1.40	0.50	Advancing
6. Opposite Diagonal	1.40	0.50	Advancing
7. Cross	1.20	0.41	Advancing
8. Triangle	0.92	0.40	Emerging
9. Line with Arrow (+)	0.80	0.50	Emerging
10. Two Touching Circles	0.88	0.44	Emerging
OVERALL	1.21	0.48	Advancing

This table shows the learners' handwriting skills before entering the PENMA Program. The average scores were on the lower side, which points to issues with letter formation, spacing, and neatness. The standard deviation numbers imply that there were differences in the learners' performance, some of them being a bit better in handwriting control than others. This data is in line with the main issue identified at the beginning that most learners were not ready for handwriting and needed a well-planned intervention.

Table 2. Mean and Standard Deviation of Direct Purposeful Activities in Enhancing Pencil Grip

Task	MEAN	SD	DESCRIPTION
1. Day 1 Molding Clay	4.44	0.72	Mastered
2. Day 2 Pasta Pick & Thread	4.60	0.50	Mastered
3. Day 3 Painting Lines	3.28	0.54	Acceptable
OVERALL	4.11	0.59	Controlled

This table shows the learners' handwriting skills before entering the PENMA Program. The average scores were on the lower side, which points to issues with letter formation, spacing, and neatness. The standard deviation numbers imply that there were differences in the learners' performance, some of them being a bit better in handwriting control than others. This data is in line with the main issue identified at the beginning that most learners were not ready for handwriting and needed a well-planned intervention.

Table 3. Summary of Direct Purposeful Activities for Pencil Grip

Task	MEAN	SD	DESCRIPTION
1. Day 4 Drawing Circles	3.64	0.49	Acceptable
2. Day 5 Drawing Squares	3.72	0.46	Acceptable
3. Day 6 Balloon Drawing	3.80	0.50	Acceptable
4. Day 7 Drawing Triangles	3.64	0.49	Acceptable
5. Day 8 Drawing Houses	3.60	0.58	Acceptable
6. Day 9 Drawing Kite	3.76	0.52	Acceptable
TOTAL	3.69	0.51	Acceptable

The table presents a brief outline of the main activities that were employed to develop pencil grip, including tracing shapes, molding clay, and grip correction exercises. The messy activities offered multi-sensory experiences that activated and strengthened the finger muscles and enhanced fine motor control skills. The summary demonstrates how each task was systematically introduced in the PENMA Program to give learners repeated exposure to the practice and refinement of their grip.

Table 4. Mean and Standard Deviation of Activities for Letter Formation

Task	MEAN	SD	DESCRIPTION
Day 3 Tracing Straight Line	4.08	0.40	Comfortable
Day 4 Drawing Circles	4.92	0.27	Very Comfortable
Day 5 Drawing Squares	5.00	0.00	Very Comfortable
Day 6 Balloon Drawings	4.60	1.00	Very Comfortable
Day 7 Drawing Triangles	5.00	0.00	Very Comfortable
Day 8 Drawing Houses	4.56	1.00	Very Comfortable
Day 9 Kite Drawing	4.52	1.00	Very Comfortable
TOTAL	4.67	0.47	Very Comfortable

The fourth table shows the differences between pretest and posttest scores in letter formation. At first, the learners were struggling with imperfect strokes and uneven spacing.

Afterwards, their scores were significantly better, with learners producing clearer and more consistent letters. The result that tracing with a purpose and doing guided writing assignments were good ways to develop fundamental handwriting skills is supported by the data.

Table 5. Scores of Evaluation of Physical Comfort During Writing Tasks

Task	MEAN	SD	DESCRIPTION
1. Vertical	1.92	0.28	Proficient
2. Horizontal	1.88	0.33	Proficient
3. Circle	1.80	0.41	Proficient
4. Square	1.80	0.41	Proficient
5.Diagonal	1.88	0.33	Proficient
6. Opposite Diagonal	1.68	0.48	Proficient
7.Cross	1.48	0.51	Proficient
8.Triangle	1.48	0.51	Advancing
9.Line with Arrow (+)	1.40	0.58	Advancing
10.Two Touching Circles	1.20	0.50	Advancing
OVERALL	1.65	0.45	Proficient

The table shows the level of physical comfort of learners while doing writing activities. Observations at pretest revealed physiological manifestations of strain, poor posture, and tiredness. Marks at posttest demonstrated a great leap forward with learners continuing to have their hands better positioned and having more stamina. The positive effects of the PENMA Program's focus on posture correction and relaxation exercises have made writing less stressful and more enjoyable.

Table 6. Post-test Scores of Beery-Buktenica Motor Coordination Drawing Tasks

Variable	Mean Difference	SD	t-value	df	p-value
Pre-Test Handwriting	0.444	0.252	-8.817	24	0.000

Post-Test Handwriting

p-value <0.05 is significant

The sixth table reveals the performance of learners in motor coordination tasks. Posttest scores were drastically higher, indicating enhanced fine motor integration. The learners exhibited features of the controlled and fluent movements while performing drawing tasks, which they further used to improve handwriting. This finding supports the belief that motor coordination acts as a basis of writing readiness.

Table 7. Handwriting Outcomes (Paired Sample t-test)

Variable	Mean Difference	SD	t-value	df	p-value
Pre-Test Attitude -	-0.520	0.259	-10.023	24	0.000

Post-Test Attitude

This table shows the results of the paired sample t-test comparing pretest and posttest handwriting outcomes. The quantitative study proved a significant difference, validating that the PENMA Program indeed influenced

handwriting performances. The findings support the idea that targeted experiences can improve handwriting readiness skills.

Table 8. Attitude of Kindergarten Learners Toward Handwriting Before and After Implementation

Question	YES	NO	MEAN	SD
1. I like writing.	8	17	0.32	0.47
0. Writing is easy for me.	12	13	0.48	0.50
0. I feel happy when I write.	16	9	0.64	0.49
0. I want to write more.	2	23	0.08	0.28
TOTAL	38	62	0.38	0.44

Table 8 shows the transformation in learners' feelings towards writing by hand. Initially, many did not have a positive attitude or were indifferent and were maybe even hesitant or lacking confidence. However, after the program, they started liking the task of writing as they also felt motivated to write. The evolution here has emphasized that learners' views on writing by hand are greatly influenced by the types of activities they are given which are engaging and purposeful.

Table 9. Post-test Frequency and Descriptive Statistics of Kindergarten Learner Attitude Toward Handwriting after the implementation of the PENMA Program

Question	YES	NO	MEAN	SD
1. I like writing.	24	1	0.96	0.2
0. Writing is easy for me.	24	1	0.96	0.2
0. I feel happy when I write.	25	0	1.00	0.0
0. I want to write more.	17	8	0.68	0.48
TOTAL	90	10	0.90	0.30

Table 9. Attitude Toward Handwriting (Paired Sample t-test) The statistical analysis of the learners' attitudes before and after the program is presented in the ninth table. Findings demonstrated a marked positive change, supporting that the PENMA Program not only improved the learners' handwriting skills but also boosted their positive feelings towards handwriting. This benefit of the program is one of the reasons why it is very important to involve children in purposeful experiences right at the beginning of their school years.

Table 10. Correlation Analysis Between the Implementation of PENMA Program and Kindergarten Learner's Handwriting

Variables Correlated	**r**	**Description**	**Sig-value**	**Decision**	**Interpretation**
Implementation of PENMA Program and Kindergarten Learner's Handwriting	0.40	Moderate positive correlation	0.05	Reject the Ho	There is a significant but moderate positive relationship.

Table 10 reveals that correlation of implementation of PENMA program and handwriting of kindergarten learners elicited a moderate positive relationship ($r = 0.40$, $p = 0.05$). The correlational findings show the medium positive correlation, but a significant one, and hence the null hypothesis is rejected in support of the fact that structured enhancement programs are really influential in the development of the handwriting. In other words, structured programs, in which handwriting has been viewed as a fine motor skill, in addition to a fundamental literacy skill, are educationally critical to the field of early childhood education. Both international and local studies can support these results. As an example, Dinehart and Manfra (2013) point out that early childhood is the critical period during which children should be active in terms of fine motor skills such as writing as they are good predictors of subsequent academic achievements, Ray et al. (2021) and López-Escribano et al. (2022) additionally noted that on-target constructed handwriting interventions could improve effectively the handwriting of the learners.

CONCLUSION

Through the PENMA Program, kindergarten learners improved their readiness for handwriting as the activities blended purposeful movement into everyday routines. These hands-on experiences helped children develop stronger pencil grips, clearer letter formation, and more positive attitudes toward writing.While the results are promising, the study was restricted by a small sample size and the lack of a control group; therefore, these findings should be interpreted as preliminary evidence. To confirm the program's sustainability and broader impact, it is essential to conduct larger-scale research over extended periods.

RECOMMENDATIONS

It is highly recommended that future research incorporate a control group to better establish a causal relationship between the PENMA Program and handwriting improvements.

Researchers should expand the sample size across multiple schools and diverse contexts to enhance the generalizability of the findings.

Future studies should extend the program duration beyond ten days and include follow-up assessments to evaluate whether improvements are maintained over time.

It is proposed that features such as tactile boards and sand tracing be added to further intensify fine motor coordination.

To institutionalize the PENMA Program as a core handwriting curriculum for Kindergarten rather than just a supplemental activity, ensuring children develop systematic readiness for formal literacy.

REFERENCES

1. Abbad. (2021). Effects of kindergarten education on the social and cognitive development of Saudi and international students. ERIC. https://eric.ed.gov/?id=EJ1416627
2. Baguio, J. M., Magulod, G. C., & Cortez, M. A. (2023). Enhancing handwriting readiness through fine motor interventions among Grade 1 learners. Philippine Journal of Early Childhood Education, 15(2), 45–60.
3. Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). The Beery-Buktenica Developmental Test of Visual Motor Integration (6th ed.). Pearson. https://www.scribd.com/document/536764036/313563170-Beery-Vmi-Completo-1
4. Beery, K. E., & Beery, N. A. (2010). The Beery-Buktenica Developmental Test of Visual-Motor Integration. Pearson. pearsonassessments.com/beery-vmi
5. IBM Corp. (2019). IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.ibm.com/spss
6. National Association for the Education of Young Children. (2020). Developmentally Appropriate Practice (DAP) Position Statement.naeyc.org/resources/position-statements/dap

7. Moses, A. (2021). Supporting literacy through engaging instruction & materials. Young Children, NAEYC. https://www.naeyc.org/resources/pubs/yc/fall2021/supporting-literacy-engaging-materials
8. UNESCO. (2015). Education 2030: Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4.sdgs.un.org/goals/goal4